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The Practitioner and Mastitis Control under the National Scheme*

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I intend to confine my remarks to the practical field side of mastitis control work, especially in relation to the national scheme. I would like to emphasise that the suggestions made are based on personal experience of self-contained breeding herds in Ayrshire, and that they may not necessarily be applicable to other districts.

Contagious Mastitis (*Str. agalactiae*)

During the last three years I have been investigating the possibility of the practical control of contagious mastitis in some 65 herds. Nearly 5,000 cows have been tested and 200,000 quarter samples have been examined. On the whole the results are disappointing, since only four farms have been completely cleared of infection. On the other hand a considerable number have been greatly improved especially in regard to clinical mastitis. The results are not, however, sufficiently promising to justify on economic grounds the application of the method used, *i.e.*, examination of quarter samples, on an extensive scale. So far as the scheme is concerned such sampling would be impracticable even if it were desirable, though personally I consider that every herd entering the scheme should be tested once, taking mixed samples of the four quarters of each cow, in order to give the practitioner an idea of the type of mastitis and the percentage infection rate in the herd. Otherwise he will be working more or less in the dark. When taking these samples the teats should be washed with disinfectant as they may harbour streptococci on the outside skin, and care should be taken that they are dried since, if drops of water or disinfectant fall into the tube, the result obtained may be false. These precautions are of course useless unless the sample bottle is absolutely sterile. Except in special circumstances bottles should always be supplied by the laboratory.

Should the first herd test show less than 10 to 15 per cent. infection it may be assumed that the general care and management of the herd is satisfactory and that it is practicable to treat all infected cows and sell any that do not respond. In this manner I have freed the four herds referred to above, which have had no positive reactions (even to delicate diagnostic methods) for about twelve months. The main difficulty here is that in herds only slightly affected with contagious mastitis, the infected animals are usually the oldest, *i.e.*, are those which have been kept for breeding purposes and for their high yields. It is difficult to persuade the farmer to dispose of these animals, yet while they remain in the herd they constitute a constant source of infection to the younger stock. Nevertheless, in course of time such animals will be eliminated and, provided the rest of the herd has been kept reasonably free from infection, the younger infected animals can be disposed of and the disease eradicated. Here it must be noted that newly calved heifers may be affected. There is evidence that the udders of virgin heifers may harbour *Str. agalactiae* and that this may be due to calves sucking each other's teats (Bryan, Moore and Campbell, 1940, and Schalm, 1942).

If the rate of infection is above 15 per cent. enquiry should be made to ascertain if there is any obvious cause for the high incidence. Firstly, ascertain whether a large proportion of the cows are old breeding stock. If so, the only practicable procedure is that already described. Secondly, note the number of positive cows that have just calved or are drying off. If there is a large proportion of such cows in the herd the infection rate will appear higher than if all the cows are in full milk. If it is found that neither of these factors is operative, the milking machine should be examined. Our figures, partly published in 1941, have shown that there is a significant difference in the infection rates according to the machine used. Thus in comparing the herd infection rates in 49 herds (using the figures from 45,000 tests on 2,800 cows), the mean infection rate for six tests was 14 per cent. in herds using one type of machine and 40 per cent. in herds using another type—a ratio of 1 : 3.

Treatment and segregation methods were invariably found to be useless in the latter group but were often successful in the former. My own view is that a milking machine should milk at about 13 lb. pressure, at about 38 pulsations per minute, and be light in construction. There should not be more than three units per man. In my experience, although hand milking often reduces the infection rate, and especially the incidence of clinical infection, in herds which have previously been milked with badly handled machines, the best results have been in herds properly milked with a good machine rather than in hand-milked herds. This may be due to the difficulty of sterilising the hands as compared with the relative ease of sterilising satisfactory types of teat cups. But even here Hay (1941) has shown that to sterilise teat cups completely it is necessary to use live steam for 30 seconds between each cow, and that dipping the units in disinfectant is not sufficient. I have found that immersion of used teat units in 1,000 p.p.m. available chlorine does not sterilise certain types of teat cups within 40 seconds, even if they are previously rinsed in sterile water, though in my experiments much less time was adequate for other types.

Should it be established that, despite the use of a correct machine, the employment of a careful cowman and the adoption of good handling, the mastitis rate is still high, other factors must be considered. No figures are available regarding the influence of such factors as the virulence of the strain of streptococcus, the breed of cow, the influence of the present low plane of nutrition, or the faulty construction of byres leading to tramped teats, and other possible aetiological causes. Until such figures are available the influence of these factors on the mastitis infection rate cannot be assessed. But they should be borne in mind in any cases where no other obvious factor can be implicated and, if thought to be responsible, efforts should be made to remedy them. One factor which appears to be important is the presence of either previous local infection with, *e.g.*, a staphylococcus (Pounden and Johnson, 1941) or previous general infection. In the latter case foot-and-mouth disease has been specifically implicated by several workers (Christiansen, 1940, and Kastli, 1941).

Once the causal factors have been established and eliminated, an immediate decrease in the mastitis rate may be expected. For example, the accompanying table shows that in two farms where there was no other change than substitution of one machine for another and where no infected animals were sold off, the percentage mastitis infection rates at successive two monthly periods were steadily reduced whereas in two similar farms where the machine was not changed the rate has remained high. These six tests are comparable as they cover the same period of twelve months in all cases. The first and last tests were taken in the same month in successive years.

Effect of Change of Machine on the Mastitis Infection Rate.
Percentage Incidence of Contagious Mastitis
(Tests at two-monthly intervals)

Farm	Test 1	Test 2	Test 3		Test 4	Test 5	Test 6
	%	%	%		%	%	%
A	69	73	89	Machine	69	48	51
B	61	75	79	changed	65	54	42
C		43	47	Machine	64	52	79
D	51	69	54	not changed	60	67	74

Such an environmental factor is clearly of very great importance. In my experience segregation and/or treatment of infected cows is of no value in heavily infected herds unless adverse environmental factors have first been traced and removed.

Moreover, even if all the infected cows are efficiently segregated, the organism can still live for months on clothes and in the byre (Bryan, 1934), and is constantly present on the attendants' hands. Such infection of the hands may persist for many days after milking affected cows and after washing in disinfectant (Harrison, 1940). Here I might interpolate that soap, water and a nail brush provide the best means of removing the organism from the hands. In view of these difficulties the mastitis-free stock are constantly exposed to the risks of fresh infection. If no adverse environmental factors are present to aggravate infection, many cows will clear themselves and

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remain free. Thus once such adverse factors are removed, segregation, treatment and hygienic precautions (or preferably the sale of infected stock) will greatly reduce the infection rate. The great difficulty is to persuade the farmer to take the special precautions necessary to render his herd absolutely free from the disease, particularly as it is not possible to guarantee that it will remain so indefinitely.

I will now turn to the methods of treatment of contagious mastitis in herds included under the national scheme. It is hoped that by the use of the strip cup cases will be discovered at an early stage. I suggest that any such cases should be dosed with sulphanilamide for two or three days, and that simultaneously samples should be sent to the laboratory for confirmatory diagnosis. Many cases of mastitis are not due to *Str. agalactiae*, but this is the only organism which reacts to sulphanilamide treatment (see Stableforth *et al.*, 1943). *If* the laboratory diagnoses contagious (streptococcal) mastitis, a further three days' treatment with sulphanilamide may be useful, since this may clear the cow completely. This second dosing is, however, not recommended in cases where the cow has just calved or is drying off, since any resultant fall in milk yield may then be permanent. If possible, a second sample of milk should be tested a few weeks after treatment: if positive, the quarter should be treated with acriflavine (1/10,000), while dry, according to the method described by Stableforth and Scorgie (1938).

If the cow fails to respond to sulphanilamide or if the infection is more definite than merely clots in the milk (that is, if the symptoms of acute mastitis are present), the sulphanilamide dosing can be supplemented by injection of the quarter. In herds in which sulphanilamide has already proved of little or no value it may be omitted and replaced by acriflavine or similar injections. My own experience is that sulphanilamide, while excellent in some herds, is useless in others: similarly, acriflavine gives good results in some herds and poor results in others. Incidentally, when injecting a milking cow as distinct from a dry cow I never fill the whole udder, but prefer to inject small quantities of much greater strength into the teat cistern only. (*c.f.* Steck, 1938.)

The method of injection which I have used until recently has been to wash out the teat with 4 ounces (100 c.c.) of 1/1,000 acriflavine in warm distilled water followed by a further injection of 4 ounces left in for ten minutes. This is repeated daily for several days. In certain herds I have obtained very good results by this method. Recently, however, I have used an injection of 20 c.c. of a 1/500 emulsion of acriflavine in alcohol and liquid paraffin. The acriflavine is dissolved in one part of alcohol (rectified spirit with a little water) and the solution added to nine parts of liquid paraffin. The emulsion separates and must be shaken vigorously before use. The injection is left in the udder until the next milking, when it is stripped out. This treatment is repeated daily for at least three days. I have not so far seen any undesirable reactions to these injections though injections of 50 c.c. caused induration. The figures for the first ten quarters treated, all of which were purulent and most of which were of long standing, are: eight clinically cleared, one clinically improved, and one now dry, seven of these being bacteriologically clear. I have used this method only for really badly infected quarters. I employ the usual 1/10,000 solution of acriflavine for injecting dry quarters. In some herds this has given very good results.

Another point in treatment may be noted. Whenever I have a torn or damaged teat I clean the teat and pour over it some 1/500 acriflavine-paraffin emulsion and then dust on sulphanilamide generously. Sulphanilamide is also given *per os* for three days as a preventive especially if the quarter is known to harbour *Str. agalactiae*. I also dose with sulphanilamide if the teat is cut for a "pea."

Other Types of Streptococcal Mastitis

Apart from the type of infection so far dealt with, there are two other types of streptococcal mastitis, *i.e.*, those due to the *Str. dysgalactiae* and *Str. uberis*.* *Str. dysgalactiae* mastitis is due to a streptococcus which is probably ubiquitous in the byre and which occasionally causes an acute clinical mastitis. This is not amenable to specific treatment and is characterised by the sudden hard swelling of the quarter which usually resolves in two or three days, with little permanent damage. Some quarters are lost, but this is not a frequent sequel. Except in certain peculiar herds the organism is rarely established permanently in the udder. It is not distinguishable microscopically from *Str. agalactiae* but is readily differentiated in the laboratory by its behaviour on culture media containing blood and by its antigenic structure. Treatment is merely symptomatic. Massage and stripping are useful but udder injections of the usual drugs are never indicated as they will do no good and may injure the teat. Sulphanilamide is valueless but I have a clinical impression, not backed by scientific figures, that a mixture of formalin and a mild vesicant ointment mixed and applied externally is valuable.

Str. uberis is likely to be more persistent than *Str. dysgalactiae*. In my experience they tend to be common in some herds and very rare in others. The clinical condition is not distinguishable from contagious mastitis but the organism can be differentiated, though with some difficulty, in the laboratory. So far as I know no treatment is of proved value.

* These are the mastitis streptococci Groups II (*Str. dysgalactiae*) and III (*Str. uberis*) of Minett, Stableforth and Edwards.

Staphylococcal Mastitis

While this condition may occur in dry cows or heifers it is more frequently a disease of the milking stock, and especially of newly calved cows. The first sign is often a scab at the teat orifice, followed by the rapid swelling of the quarter with a reddish brown exudate taking the place of the milk. The infection may spread to the other quarters, and death occurs in a high percentage of cases. A direct smear is usually sufficient for diagnosis, since the staphylococci are extremely numerous. Gould (1942) has recently described the clinical symptoms very fully and I would refer you to his article for the clinical details. If injected early, daily doses of 10 c.c. of staphylococcus toxoid for two or three days have a beneficial effect, and even if the disease is well established it usually saves the life of the cow though the quarter is lost. I know of no other useful treatment. As a possible means of prevention I have injected experimentally 40 cows in a herd which usually has severe cases in the spring. The injection given was 10 c.c. of toxoid, followed two months later by a further 10 c.c. Of the 20 cows left as controls, two developed staphylococcal mastitis, while none of the 40 has become infected. This experiment needs repetition on a larger scale and over a period of years. It does hold out some promise of success, though at best it would only be of value in those herds where the disease is endemic. I have not so far encountered much chronic staphylococcal mastitis in Ayrshire but I feel that this may have been overlooked in using special media for the isolation of streptococci.

Corynebacterium Mastitis

This disease usually occurs in dry cows as an acute, and frequently a fatal infection, often characterised by a foul smell. Its clinical picture appears to vary considerably from district to district. The secretion may be purulent or may be a brownish glairy liquid with flakes. Diagnosis by microscopic examination of direct smears from the milk is usually possible as the discharge is frequently crowded with bacilli, though on occasion only a few organisms can be seen. Microscopic diagnosis is occasionally difficult, as the granules in the bacterial cells may be mistaken for the elements of short streptococcal chains. Experience overcomes this difficulty. Epithelial cells also occur more commonly than in slides of streptococcal mastitis. Present methods of treatment are unsatisfactory. M & B 693 in a dose of 50 to 75 grammes, followed by 25 to 50 gramme doses twice a day, is of value in reducing the temperature and slowing the pulse and may save the life of the cow, though the quarter is usually lost. I have used anti-serum on one or two cows, but without much success. So far as I know, the toxoid has not been used on any large scale, for either treatment or prevention, and in the few cases I have treated it has not been of any value. I consider the best preventive in practice is the frequent application of a fly repellent to the udder. Udder seals may be effective, but I am personally not yet satisfied as to their value.

Conclusions

The procedure which I would recommend to any practitioner working under the national scheme is as follows:—

1. Take bulk samples from each cow in order to establish the approximate infection rate for contagious mastitis.
2. Advise according to the rate of infection found. In any case suggest the usual hygienic precautions and the use of a milking machine with as low a pressure as possible. Segregation or sale of infected animals should not be advised unless the infection rate is low or the facilities for segregation and the elimination of infected stock are very exceptional.
3. Treat any animals showing only a few clots in the fore milk with sulphanilamide for two or three days.
4. Treat all milking quarters clinically affected with contagious mastitis with a teat cistern injection as described in this paper.
5. Previous to treatment a sample should be sent to the laboratory for the confirmation of *Str. agalactiae* infection. Never rely solely on clinical evidence or on microscopic examination for the definite diagnosis of contagious mastitis, since such methods cannot distinguish between this and other streptococcal infections.
6. Inject any dry cows known to be infected with contagious mastitis, with a solution of acriflavine in distilled water (1/10,000). Leave in for 24 hours and repeat in one week.
7. If any clinical signs are due to sporadic streptococcal mastitis (*Str. dysgalactiae* or *uberis*) advise stripping and massage, supplying a mild vesicant ointment incorporating formalin 2½ per cent. for this.

8. Inject any cow which is clinically affected with staphylococcal mastitis with 10 c.c. staphylococcal toxoid daily for three days.

9. Treat any cow suffering from corynebacterium mastitis with M & B 693 and advise fly repellents applied as often as possible as preventives. As an additional precaution the teats of dry cows may be sealed with a bismuth preparation if requested.

In conclusion, I should like to mention that the major portion of the work on mastitis is financed by the Agricultural Research Council.

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Discussion

(1) By the North Wales Division, N.V.M.A.

Mr. Salusbury asked: (1) What was to be done with the cow suffering from chronic streptococcal mastitis which was half-way through lactation, (2) of what importance from a public health point of view was the cow with streptococcal mastitis in one quarter, (3) what was the speaker's view of the bismuth injection for dry cows.

Dr. Watts: Mastitis must be considered in the herd as opposed to the individual cow. In the case mentioned sulphanilamide and injection of acriflavine emulsion into the teat sinus was his recommendation. Small daily injections would not reduce milk yield. The cow with one quarter affected should be treated and the milk could be put into the main bulk as soon as it looked normal. With regard to the bismuth injection, he had no knowledge of accurate figures from controlled experiments.

Mr. A. Sutherland mentioned laboratory reports on milk samples indicating the presence of haemolytic staphylococci which were "probably not significant of mastitis." Was it necessary to treat such cases with staphylococcus toxoid? Further, could the speaker give his opinion on the value of vaccines and of colloidal manganese? With regard to pyogenes mastitis of dry cows, his own experience with the bismuth injections had been very encouraging. On one farm this year the only dry cow which did not get injected with the bismuth preparation was the only cow to develop "udder clap." He had once tried M & B 693 in treatment but without success. He had had better results with S.U.P. 36 (B.D.H.) using a single 15 c.c. dose.

Dr. Watts: He had had no personal experience of chronic staphylococcal mastitis though he understood that it had been encountered in the Midlands and in North Wales. It was important to ensure that the sample was taken properly, as staphylococci could easily be introduced when sampling. He could not say whether toxoid might be effective—possibly it might cause a flare up and should be used with caution in such cases. He doubted the value of vaccines for contagious streptococcic mastitis; some experimental experience he had, suggested that they did not affect the infection rate. He had never tried colloidal manganese or S.U.P. 36.

Mr. Booth asked what was the value of formalin, which he had found successful in some cases. (Other speakers also mentioned this treatment.)

Dr. Watts: As formalin was excreted in the milk it might have a direct antiseptic action. Formalin preparations on the udder did seem to have some effect in clearing up an acute attack and might be useful, especially if combined with a mild vesicant ointment.

Mr. H. V. Hughes: Could the speaker tell him the concentration of sulphanilamide required in the blood? What was the safe proportion? Would it not be better to continue treatment beyond two days without awaiting laboratory diagnosis?

Dr. Watts: It was necessary to maintain a concentration of 10 mg. per 100 c.c. in milk—less than 6 to 8 mg. was of little value. In the average cow a dose of 3 ounces followed every eight hours with 1 ounce gave the necessary concentration. One could expect a clinical cure in two to three days in a cow which was going to respond. A bacteriological cure could be expected in a proportion of cases if the treatment was carried on for seven to eight days, but to carry on longer than two to three days was a waste of sulphanilamide in most cows.

Mr. Jones-Parry reported having used the 1/1,000 acriflavine emulsion supplied by various firms. He used 20 c.c. doses—forcing it in with a syringe without introducing a needle.

Dr. Watts saw no reason why this should not be successful. 1/500 might be better. A dose of up to 50 c.c. could, he thought, be safely used if the 1/1,000 emulsion were used.

Mr. Sutherland asked what was the difference in practice between euflavine and acriflavine. The speaker replied that he had not had such good results with euflavine though he had not used it very much. The Americans thought that entozon was a little better. Acriflavine, however, was cheaper and plentiful.

Mr. Bowen: Had Dr. Watts experience of "black spot" which was commonly met with in North Wales? The lesion was at the end of the teat—necrosis set in at the end of the teat and a pit formed. Mastitis often followed and was difficult to treat.

Dr. Watts: He had not seen "black spot" in the North. He understood that it led to a permanent injury of the teat sphincter and mastitis was, therefore, likely to be recurrent and very difficult to treat. He suggested the excision of the necrotic material and putting on acriflavine emulsion followed by dusting with sulphanilamide.

Mr. Forgrave: What was the speaker's practice in making up acriflavine for udder irrigation? Did he make it up on the farm or in the laboratory? Did he have any difficulty with hard water? He himself had noted swelling in the udder following use of hard water.

Dr. Watts: He always made up acriflavine solution in the laboratory. In his case it was warmed up to 60°F., and by the time he reached the farm it was about the right temperature for injection. He had not had difficulty with hard water in Ayrshire. When this was a difficulty he suggested using rain water. Hard water would certainly cause a clinical reaction. Acriflavine emulsion was injected cold.

Mr. Llewelyn Jones had encountered cases in which thickened yellowish milk was seen but without other clinical signs of mastitis; was this a form of mastitis?

Dr. Watts guessed that this might be physiological. Peculiar discolorations or smells might be due to feeding. A possibility was the presence of blood or breakdown products of blood in the milk—especially in a heavy milker.

Mr. Mayor: Should the udder be massaged after injection of acriflavine emulsions into the teat cistern?

Dr. Watts: Massage should be confined to the teats and teat sinus and must be directed downwards.

Replying to questions by Mr. D. T. Roberts the speaker emphasised that no attempt should be made to inject anything into the udder in acute corynebacterium mastitis in the dry cow—a fatal result was possible if this was done.

Discussing milking machines, he remarked that variations in pressure might be due to a clogged air filter and this was a point to look out for.

(2) By the North of England Division

Mr. Hignett opened the discussion in the following terms:—

In the first place, I should like to say that I fully appreciate the honour conferred upon me when I was invited to come here and open the discussion on Dr. Watts' paper. In the second place, I should like to thank Dr. Watts for his excellent contribution and for the lucid manner in which he has put the problem before us.

We must all realise that mastitis is a complex problem and research over a period of years has been attended with results which are on the whole disappointing. Let us ask ourselves the question, are we sure that bacteria are the primary factors? As a hybrid (partly laboratory, partly field worker) I do welcome Dr. Lovell's recent reference to the statement by Ryle that no disease has a single cause and the discovery of specific microbic and other agents of disease has had a limiting effect upon the vision and practice of many medical men. A number of field workers have had similar thoughts but have hesitated to commit such ideas to paper for fear of being accused of heresy, but now an eminent bacteriologist has cleared the deck for action. It seems to me that in order to make progress we must improve our ability to make accurate clinical observation. The older practitioners knew little about bacteriology but they more than made up for this deficiency by their keenness of observation.

What are the possible factors involved in mastitis, apart from bacteria which even if secondary are undoubtedly responsible for much tissue destruction? The following suggestions can be put forward.

1. *Virus.*—Broadhurst and her co-workers in America claim to have isolated a filtrable virus from the mammary secretion of cows affected with mastitis. This may account for the fact that quite frequently no bacteria can be isolated from samples of mammary secretion taken from early acute cases of the disease.

2. *Hormone Derangement.*—Injections of stilboestrol are sometimes followed by changes in the quality of the milk. Chronic mastitis in women is stated to be due to excess of oestrogen.

3. *Trauma.*

4. *Management.*—In his paper Dr. Watts mentions "general care and management" as being "satisfactory." I should like to know exactly what he means by this. Those engaged in mastitis control work frequently come up against herds which are comparatively free from mastitis in spite of the fact that no special precautionary measures are taken to prevent the spread of the disease. Usually, however, such herds are encountered on arable farms where the cows are bedded up to their bellies in good clean straw. Personally I think that the fetish for clean milk has been carried to excess and that the constant application of water to the cows' udders is in no small measure associated with the serious incidence of this disease in many dairy herds.

5. *Nutrition.*—Vitamins or minerals might be involved. In addition there is some evidence that high protein rations lead to the appearance of flakes in the milk.

6. *Climate.*

7. *Susceptibility of the Host.*

8. *The Conformation of the Host.*—Particularly as regards the tightness or otherwise of the teat sphincter and also as regards the degree of mammary development.

Streptococcal Mastitis.—In his paper Dr. Watts talks about removing adverse environmental factors. In my experience, in many herds where a high percentage of the cows are suffering from mastitis it is impossible to put one's finger on the adverse environmental factors, certainly on any such factors which are removable.

There is a seasonal incidence of this disease and I would like to know at what time of the year Dr. Watts changed the milking machines in the experiments which he describes. Were the tests of all herds taken at the same time of the year? If not, is it not possible that the seasonal influence has had an important bearing on his results?

There is undoubtedly breed susceptibility and whilst mentioning this it will not be out of place to say that in the experience of certain American workers and in our experience the Ayrshire is particularly resistant to treatment for this disease.

I agree with Dr. Watts that a number of animals can actually rid themselves of infection.

For some considerable time clinicians have been aware of the fact that there is a marked variation from animal to animal and more especially from herd to herd in the response to sulphonamide therapy. By means of the "ditch plate" technique we are now able to show that there is strain variation as regards response to sulphonamides. In other words, the streptococcus taken from a cow in one herd whilst bacteriologically and serologically indistinguishable from the streptococcus taken from a cow in another herd does in fact react very differently in contact with sulphanilamide. It is hoped that in the near future when reporting on milk samples it will be possible to indicate to practitioners whether any animal suffering from streptococcal mastitis is worth treating with sulphanilamide.

I question Dr. Watts' recommendation that, as a preliminary, milk samples from all cows in a herd should be tested. Whilst this is approaching the ideal, laboratory facilities are unfortunately all too few to make this recommendation a practical proposition. In spite of the very great progress as regards the technique of milk testing we still need a much simpler method. In addition, since Dr. Watts is advising on steps to be taken under the Survey Scheme, I fail to see why he should suggest that all cows showing clots in the foremilk should be dosed with sulphanilamide, as the majority of practitioners will normally only receive about 1 lb. of sulphanilamide for ten cows. In our experience the best results are obtained by infusing the udder with sulphonamide E.O.S. Whilst the use of small quantities of a more concentrated antiseptic injected into the milk cistern is more effective than large quantities of weak solution it should be borne in mind that the former treatment is liable to lead to a number of blind quarters if carried out with lack of care.

I do think that Dr. Watts has not laid sufficient stress on the great value of hypochlorites in preventing the spread of streptococcal mastitis. It is all very well to suggest the scrubbing of hands in soap and water but this is a long and tedious business, not likely to be carried out as part of the milking routine. The dipping of the hands into hypochlorite solution is a much simpler operation even if slightly less effective. Whilst steaming of the teat clusters is the most effective form of sterilisation, the best practical means between each cow is immersion in hypochlorite solution. The control work on dairy farms at the present time is seriously handicapped by the lack of suitable labour.

I am shocked by Dr. Watts suggestion that infected cows shall be sold! To whom? To the poor Sassenach? Is this the reason for the high incidence of mastitis among the imported Ayrshire cattle?

Staphylococcal Mastitis.—Chronic staphylococcal mastitis is not at all uncommon in the North East. If udder infusion is carried out in such cases there is always the risk of setting up acute staphylococcal mastitis. I disagree with Dr. Watts in his reference to the frequency of acute staphylococcal mastitis in dry cows and heifers. In this part of the country it is as common as (if not commoner than) corynebacterial mastitis. Having had little success with staphylococcal toxoid we

are now attempting to rectify the condition by means of sulphathiazole and sulphone Mr. Pickering, I am sure, will be able to tell you more about this point.

Corynebacterium pyogenes Mastitis.—This is much to the fore just now since we have recently experienced a bad "summer mastitis" season. Speaking for the North East, corynebacterial mastitis is not (as stated by Dr. Watts) frequently fatal. I should like to know what the essayist thinks about the possibility of calfhood infection. In our experience the best method of treating the condition is by the use of toxoid. Pyogenes antitoxin is useful for bringing about a reduction of systemic symptoms. In 1940 Lamont and Foggie recommended the use of M & B 693 but in our experience both this drug and sulphanilamide have about the same effect as the use of antitoxin.

Whatever treatment we adopt for any type of mastitis the method must not be too expensive from the point of view of drugs, number of visits and time involved. It must not be such that it is uneconomic both for the farmer and for the veterinary practitioner. Can the practitioner treat cows on several successive days with the possibility of repetition in a week's time? Can he afford to use staphylococcal toxoid in 10 c.c. doses on two or three occasions? Finally, can we, as a profession, recommend that treatment, even subsequent treatment, be left in the hands of the farmer?

Mr. J. P. Pickering thanked the speakers for the information they had given. After listening to the experts it still seemed to him that there was a lot to know about mastitis and it was interesting to note that there was a swing to the view that the disease might be caused by things other than micro-organisms. The idea of a virus was most interesting. In the past few weeks there had been much information in the *Record* about the control of mastitis. In Holland variable results had been obtained with sulphanilamide, but the speaker had had consistently bad results even with increased doses. Occasionally a good result was obtained but the majority were bad. He had tried a concentrated solution of acriflavine in the teat, giving 1 ounce in each teat. The results, however, were only fair. It was sometimes said that it was not much good a practitioner looking at smears from mastitis and he had recently been incubating overnight and examining smears in the morning. Dr. Watts said that it was easy to differentiate mastitis in the lactating cow. Sulphone appeared to work well against both streptococci and staphylococci. Someone had remarked that the weal on the back of the udder was a distinguishing point in summer mastitis. He did not agree. Further, he had not found any good results from toxoid treatment but it had to be remembered that the disease was of sudden onset and it did not give any treatment a fair chance. So far as he could see, summer mastitis was an incurable disease. It occurred in cows or in heifers. Systemic symptoms were not usually observed but the udder was filled with pus and cows might die of gangrene. He had used M.371 with promising results even in mastitis due to haemolytic staphylococci. E.O.S. was also good. As a prophylactic the speaker favoured injecting one part of bismuth to four of base, and thought on the whole that the results had been good. In two cases breakdown occurred just after treatment, and the infection might have been introduced at that time. He injected 2 ounces into each teat and he had never seen any intoxication resulting from this treatment; he failed to see how such a sequel could be possible.

Mr. T. M. Mitchell thought that the Control Scheme was a very good one. Before its inception he was not altogether in favour of it but felt that now it was in being the profession had a great opportunity and was, in fact, doing a lot of good work.

Summer mastitis did not appear to be prevalent in his practice, though he did get a number of cases of mastitis during the summer months accompanied by considerable systemic disturbance. What the causal organism was he was unable to say, but suggested the infections were various, quoting one outbreak apparently caused by sewage contact. He asked Dr. Watts if he could give a definition of summer mastitis and further asked if it would be correct to say that it was simply an acute mastitis, occurring in the months of July, August and September, which was not due to streptococci. So far no-one had mentioned anything about the spread of mastitis and altogether there was too much that was vague about their conception of the disease. He was interested to learn, and agreed, that other factors were probably more important than micro-organisms in the incidence of mastitis.

Regarding sulphanilamide treatment of streptococcal mastitis, he had not been able to notice any difference in the response of Ayrshire cows as compared with Shorthorns. All seemed to respond well to adequate dosage—3 to 4 ounces followed by 1 ounce doses three times daily, and many affected animals produced marketable milk within 48 to 72 hours.

Mr. J. D. Peele thanked the speakers and asked whether sulphanilamide was much good for Group 2 streptococci. He wondered if any suggestions were forthcoming whereby the laboratory diagnosis could be speeded up to minimise the delay in applying the correct treatment. He believed that chill lowered the resistance of cattle to mastitis and for this reason he believed in keeping cows in overnight. The management was undoubtedly very important in controlling mastitis. He asked particulars about the cost of sulphone.

Dr. Watts, in his reply, thanked Mr. Hignett for opening the discussion in such an able way. Mr. Hignett had asked what he considered was "satisfactory" management. By that he meant that the cow was being properly looked after, carefully milked and handled and adequately bedded in suitable stalls and not regarded simply as a machine to produce milk. It was noticeable, in his experience, that the worse the herd from the pedigree and clean milk point of view the greater the freedom from disease, though of course this did not mean that dirty conditions meant no disease but merely that too much emphasis on "cleanliness" might be harmful. He was interested to learn that Mr. Hignett thought this too. As to the difficulty of finding and removing adverse factors this was certainly difficult in some cases but often it was extraordinary what obvious causes were found by a little cross-questioning. One he might mention was irregularity in milking times, causing overstocking. As to the question of seasonal variation, this was possible and was probably due to the proportion of cows in late or early lactation varying at different seasons, but the figures he gave of the fall in the mastitis rate after the machine was changed, were chosen because the last test was exactly a year after the first, *i.e.*, was taken in the same month one year later, and also the controls did not show this drop in numbers of affected cows. As to breed susceptibility he dealt only with Ayrshires and they were certainly difficult to treat. He recommended a single complete test of each herd because this did give the practitioner a picture of what he had to deal with. The practitioner might have far more infection than he thought if he relied merely on his clinical examination. Dr. Watts thought that there were sufficient laboratory facilities for this to be done at the rate the herds were being accepted in the scheme. Even if in some areas there was a delay it would not matter greatly if they were eventually done. As to the supply of sulphanilamide, he understood from Mr. Douglas, D.C.V.O., that this was a misunderstanding. More than 1 lb. per ten cows was available if necessary. He had not stressed hypochlorite disinfection since, although he had been much impressed by it a few years ago, he had found that on the whole the results were equally good without it—or perhaps it might be better to say the results with it were as bad as those without it. This might be due to not using it properly and he was hoping to do some work on this in the near future. He was interested to hear that staphylococcal mastitis was common in dry animals; he would look for it more closely in future, but unfortunately he did not see many cases of mastitis in dry cows. He presumed the bad results with staphylococcal toxoid were in the dry cows and he would look forward to Mr. Hignett's results with drug therapy with interest.

He was interested to hear that Mr. Pickering had tried concentrated solutions of acriflavine with only fair results. Incidentally, he must emphasise that these concentrated solutions should not be injected into dry cows as they tended to blind the quarter. Toxoid treatment of staphylococcal mastitis had to be applied very early to save the quarter but in any case it usually saved the cow. He had never used M.371 or E.O.S. in treatment. He was interested to hear that two of Mr. Pickering's cows injected with bismuth paste developed summer mastitis. These cases were very difficult to explain away to the farmer.

In answer to Mr. Mitchell, he would personally define summer mastitis as what he had described as staphylococcal mastitis, but it was also used possibly more widely to refer to corynebacterial mastitis. He was glad to hear of Mr. Mitchell's success with sulphanilamide. Answering Mr. Peele, he did not think sulphanilamide of any use against non-contagious mastitis.

(3) By the Ayrshire Division

Mr. Paterson (Auchincruive): He had lately had some experience of attempting to control mastitis. At the Wye college they had had about 50 herds tested at intervals and found that the average incidence was high (over 15 per cent.). No hope could be entertained of controlling the disease in these herds by identification and segregation of infected cows. He emphasised that more attention should be paid to the various rates of spread in different herds, *e.g.*, in one herd the infection spread rapidly while in another it never spread at all or only very slowly. While he thought that this might be due to secondary predisposing causes, which he believed of greater importance than the actual organism, he thought certain cases of rapid spread might be due to the greater virulence of the particular strain of infecting organism. He had treated 100 clinical quarters with E.O.S. (soluble sulphanilamide) with favourable clinical results, but they were not bacteriologically cured. With regard to staphylococcal mastitis, he did not think this was of great importance in the south as he had only seen six cases, five acute and one chronic. Summer mastitis due to *Corynebacterium pyogenes* occurred in Kent but mainly in cows in full milk. He had never seen pus in this condition but practically every other type of discharge had occurred. The only constant sign had been the smell. He had injected 20 grammes of M & B 693 into such quarters in 50 ml. of water. This had saved the cow but the quarter was lost. He had not seen systemic disturbance. In these cases the infection appeared to be localised but he would like to warn practitioners that in smears from the discharges *C. pyogenes* could be mistaken for a staphylococcus and care must be taken to ensure a correct diagnosis.

Mr. Pottie (Paisley): He would like an opinion on the value of autogenous vaccines. In one herd very bad with mastitis no case had occurred since vaccination was started. It seemed to help infected cows as well as possibly preventing others contracting the disease. He wished to know if hand milking was preferable to machine milking and if "leathery" teats were due to the machine. Was "Deosan" a suitable disinfectant for mastitis and would it be satisfactory if, say, six cloths were kept in a solution and used alternately? He had treated *C. pyogenes* mastitis with "Parentol" 100 ml. of which were injected into the parenchyma using a 3-inch needle. Not more than about 25 ml. were put in any one place. This had cured quarters.

Another point he would like to raise was what was the position of a clinical inspector if he passed a cow which immediately afterwards was condemned for mastitis by a sanitary inspector on the basis of a laboratory test.

Mr. MacAllister (Stranraer): He had eight to nine herds being injected with autogenous vaccines. He found that the clinical results were good but that those herds which were tested bacteriologically showed no improvement so far as the actual extent of infection was concerned. As to bismuth injections for dry animals he had given this up since he could not get it into heifers and of the cows he had done, several had immediately developed acute mastitis.

Mr. Kerr (Ayr): In regard to Mr. Pottie's point on the clinical inspector's position, this was quite clear. He was responsible only for clinical results. The M.O.H. did any laboratory testing. He personally thought the clinical inspection was of no value so far as mastitis was concerned but was of great value for tuberculosis of the udder.

Mr. Kennedy (Thornhill): Regular testing was of little value in commercial herds as intermittent infection occurred. He agreed that predisposing factors were of great importance and said that during lactation cows were exposed to (*a*) congestion of the udder from the milking machine, (*b*) increased flow of milk owing to heavy feeding, and (*c*) injuries to the distended teats. He would like to mention his idea that it was necessary for clinical change to occur before bacterial infection. He watched twelve cows twice a day for four and a half months and recorded his clinical observation. These cows were examined by the Hannah Institute once a week as daily examinations, though preferable, were not possible. He found that four times as much clinical change had been noticed in those cows which became infected as compared with those which did not. He thought that it was possible that carrier animals increased the virulence of *Str. agalactiae*. He did not agree that intercurrent infections increased mastitis. As to treatment, he thought mastitis very difficult to cure as the udder was damaged. He never injected acriflavine or entozon into a cow in full milk.

Mr. MacGregor (Ayr): Infections were now said to come *via* the teat canal. He thought that treatment, to be logical, should also be through the teat canal either with acriflavine or sulphanilamide, and not through the mouth. Did cowpox increase the mastitis infection? He would like to ask if it would not be better to wash the teats after milking and not before, as the disinfectant would clean the teat and not allow germs to grow. As a secondary factor of importance he would mention the abominable modern practice (due to the clean milk campaign) of laying cement floors. Not only did they cause slipping but he thought it absurd to expect cows to live and keep healthy under cold wet conditions.

Dr. Wright (Hannah Institute) asked to be allowed to speak as a non-veterinary visitor and said that he felt he must deprecate any cleavage between the veterinary and sanitary interests. He gathered from the tone of the meeting that the previous speakers' remarks about modern conditions of keeping cows met with general approval. He thought floors could be sanitary, resilient and warm. Dr. Fowler, of the Institute, had worked on this subject and had found that the best types were composite mixtures containing rubber latex. These were impermeable and had no joints.

Mr. Cameron (Carlisle): The veterinary profession would have to take a greater interest in clean milk production and he personally doubted if cement floors and washing did increase mastitis infection since cows washed in markets did not develop it. Probably the best thing was to have a milking parlour with bedding in the main byre.

Mr. Allan (Carlisle): The milking parlour was becoming popular in the North of England. He would like to ask if the resazurin test is affected by mastitis.

Mr. Cameron thought that most literature showed that it was.

Mr. Carnegie (Brampton): There was much corynebacterial mastitis in Cumberland, mainly in cows just dry or just going to calve. It was termed "dry bag mastitis" and the udder became enlarged and hard with pus or any kind of discharge. Of the many hundreds he had seen this year none had died, though the quarters were lost and so was condition. When they recovered they were sold fat. He had used the Scheme method of sealing the teats in 30 to 40 cases. As at least 13 had developed acute corynebacterial mastitis within a week or so after injection he had discarded it. He had seen a number of cases of a gaseous type of mastitis he attributed to staphylococci, always occurring within a week or so of calving or just before calving. The quarter was gangrenous with a horrible smell. Usually the cow died rapidly and *post-mortem* examination showed small gangrenous patches in the udder tissue. A few recovered with the quarter sloughing off. Usually one quarter was affected though occasionally both on one side, but never both fore or both hind.

Mr. Gilmore (Ayr): In Ayrshire corynebacterial mastitis occurred mainly in cows coming to the calving but occasionally in milking cows. Most cases were as described by Mr. Carnegie but a number of fatal cases occurred. If treated with M & B 693 before calving the quarter was occasionally saved and in any case the cow rapidly recovered her general health. If one quarter only was affected dosing with M & B 693 prevented the other quarters becoming affected.

Mr. Moodie (Ayr): Udder clap or dry bag mastitis was due to both staphylococci (a type which was more fatal and did not respond to treatment) and corynebacteria which did respond to M & B 693 in full doses. This might save the quarter.

As to contagious mastitis, he would like to know if heredity and conformation affected it. An Australian journal had reported that it was possible to group young animals according to their history and to forecast how long they would be before they developed mastitis.

Dr. Watts replied as follows:—

To Mr. Paterson. He thought that the rate of spread of infection in a herd varied with the management rather than the virulence of the infecting strain and instanced a case where an infected cow from a herd 100 per cent. infected was introduced into another herd and though no special efforts were made and she was milked in the middle of the line, the haemolytic streptococcus she harboured never spread during the year or so she was in the byre. He was glad to hear that Mr. Paterson had not encountered many cases of staphylococci mastitis as he had rather wondered if his own negative results were due to faulty technique. He thanked Mr. Paterson and those who had given so much useful information about corynebacterial mastitis; he now had a much clearer picture of its clinical variations than before the meeting and he was pleased to see that there was some evidence that M & B 693 was of value in such cases.

To Mr. Pottie. There was little to add to Mr. Kerr's and Mr. MacAllister's replies. As to the latter, he had examined cows in the vaccinated herds and found that there was no difference in the infection rates before and after vaccination. Deosan was probably quite satisfactory; it was a hypochlorite and the six cloth routine should be good. In his (Dr. Watts') opinion, leathery teats were due to the milking machine. He was interested in Mr. Pottie's statement about "Parentol" and would try it as soon as possible.

To Mr. MacAllister and others who had mentioned their bad results with the sealing preventive for summer mastitis, Dr. Watts said he was very interested as in North Wales there seemed to be some doubt as to its value but one practitioner was very keen on it. Similarly, in the North of England Division meeting there had been some difference of opinion, whereas in Ayrshire all opinions were adverse. More work appeared necessary before any such method was applied on a wide scale and it appeared dangerous to incorporate it at this stage in the official advice on the scheme.

To Mr. Kennedy. He doubted the theory that "carrier" animals enhanced the virulence of *Str. agalactiae*. He had never seen any evidence either way. He thought that despite Mr. Kennedy's belief there was sufficient evidence that debilitating disease did increase the liability to mastitis.

To Mr. MacGregor. He suggested that he try acriflavine injection into the teat rather stronger than he was in the habit of using. He had no figures to show if cowpox increased the amount of mastitis. He agreed with Mr. MacGregor that clean milk production was pushed to extremes so far as the health of the cow was concerned.

To Mr. Cameron and Mr. Allan. Concerning their advocacy of milking parlours, he thought that in theory these were excellent but there was some evidence that the bucket type of machine in the byre might be preferable. He did not know if the resazurin test was affected by mastitis in bulk supplies.

He thanked Mr. Carnegie for his admirable clinical description of dry bag mastitis and thought that though the gangrenous type he mentioned might be staphylococcal, *B. coli* and *Cl. welchii* should not be ruled out. He had never encountered such a case and would be grateful for any specimens Mr. Carnegie could send.

To Mr. Moodie. Heredity might affect predisposition to mastitis. In certain herds in the district it did appear as if certain families of cows were more prone to the disease than others, but this was very difficult to prove owing to cross breeding.

ABSTRACTS

[TUBERCULIN REACTIONS IN CATTLE INFECTED WITH MYCOBACTERIUM PARATUBERCULOSIS (JOHNE'S DISEASE).

Johnson, H. W., Milligan, J. G., and Cox, B. F. (1941.) *J. Amer. vet. med. Assoc.* **99**. 115-118.]

In the course of the tuberculosis eradication campaign the authors tested three herds with a total number of 347 cattle with tuberculin and johnin. The sites of injection were the caudal or vulval folds, and 0·1 ml. was the dose of both agents used in a single dose. All readings were at the 72nd hour. The tuberculin was that prepared by the B.A.I. on synthetic medium, the johnin was prepared by the method of Dorset and Henley.

Of the animals tested 24 reacted to the johnin test; of these, nine also reacted to the tuberculin test. None of the johnin negative animals reacted to the tuberculin test. No lesions of tuberculosis were found at *post-mortem* examination in any of the nine that reacted to tuberculin, but they all showed lesions of Johne's disease and acid-fast bacilli resembling *Mycobacterium paratuberculosis* were found in films from the bowel mucosa of eight of the reactors.

D. L. H.

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[CHICK RED CELL AGGLUTINATION TEST WITH VIRUSES OF FOWL PLAGUE AND NEWCASTLE DISEASE.

Lush, Dora. (1943.) *J. comp. Path.* **53**. 157-160.]

It had previously been found that allantoic fluid from eggs infected with influenza or Newcastle disease virus would agglutinate chick red cells.

Lush found that fowl plague virus behaved in the same way and that, as with the other viruses, agglutination was inhibited by adding specific immune serum to the infected allantoic fluid. If immune sera against the respective viruses, and fertile hens' eggs are available it is thus possible to distinguish between fowl plague and Newcastle disease within 24-48 hours of receiving specimens from the field.

J. F.

CLINICAL COMMUNICATION

Observations on the Use of Gold in Arthritis in the Dog

ALEX. J. McCARMICK, M.R.C.V.S.
Leeds

Rheumatoid arthritis is a disease of all ages though most commonly affecting older animals. It is still a matter of doubt whether the joint changes are caused by toxins circulating in the blood or whether a living virus gains access to the joints.

Initial symptoms may vary greatly. Some show general stiffness with no disturbance in temperature, while others show a marked rise in temperature, occasionally accompanied by vomiting. Most cases finally show localisation of the condition in one or more joints. If a limb is affected there is marked lameness, and if the spine is involved paraplegia may be caused.

The symptoms commonly met with in arthritis in the limb in the dog are: Marked lameness and the leg may be carried. Pain may be shown when the dog lies or gets up. Conjunctiva normal; pulse rate slightly accelerated; temperature may be raised 1-2° F.; heart shows a variable disturbance, usually the clear-cut diastole and systole are slurred and merge. The lameness can be localised to one or more joints in the affected limb. Crepitus may be felt. There may be little or no wastage of muscle, depending on the length of time the dog has been lame.

As gold therapy had had some measure of success in the human it was decided to try this method of treatment.

The preparations used were lopion (Bayer) and later myocrisin (M & B) for comparison.

Lopion is a sodium salt of auro-thiosinamine benzoic acid containing approximately 40 per cent. of metallic gold.

Myocrisin is sodium aurothiomalate with 50 per cent. gold content.

The toxic symptoms as listed for the human are soreness of mucous membrane and ulcers, sickness, colic and diarrhoea, jaundice, nephritis and very occasionally nervous complications.

The antidotes which have been recommended are sodium thiosulphate, magnesium thiosulphate, various bismuth preparations and vitamin C.

Administration of the drugs was by the intramuscular route, using the gluteal region and alternate legs. The injections are given at weekly intervals for 13 weeks. The initial dose containing 0·01 gramme is used to test the sensitivity of the animal to gold and if no general disturbance occurs the treatment may be given.

Case Records

The following cases were treated with lopion:—

Case	Subject	Position of Arthritis	Treatment Grammes	Remarks
1	Pointer dog	Right shoulder	1 × 0·01 4 × 0·025 4 × 0·05 4 × 0·1	Leg carried. Muscle wasting marked. Incomplete recovery.
2	Peke dog	Left stifle	1 × 0·01 4 × 0·025 4 × 0·05 2 × 0·1 2 × 0·1	After 11th injection left hind leg swollen. Temp. 105. Swelling burst—serous exudate. Temp. 102·5. Patient eating fairly well. Wound dressed normal saline and prontosil, gr. 10 given daily for 4 days. Given 3 × 10 c.c. glucomag. to counter collapse. Temp. normal in a week. A week later injections continued. Two days after last injection a corneal ulcer developed. Appetite capricious, muscular wasting marked. Gradually lost weight and died. Following the result of this case the dose for small dogs was cut down below that recommended by Bayer's.
3	Fox terrier	Both stifles	1 × 0·01 4 × 0·025 8 × 0·05	Animal had great difficulty in rising. After 5th injection no pain on handling and able to leap. Uneventful recovery.
4	Cairn	All four legs	1 × 0·01 12 × 0·025	Uneventful recovery.
5	Airedale	Both stifles and hocks	1 × 0·01 4 × 0·025 4 × 0·05 4 × 0·1	Cured.
6	Chow	Left elbow	1 × 0·01 4 × 0·025 8 × 0·05	Cured.
7	West Highland	Right stifle	1 × 0·01 4 × 0·025 4 × 0·01 1 × 0·025 2 × 0·01 1 × 0·025	After 5th injection abscess developed at site. Cured.

Case	Subject	Position of Arthritis	Treatment Grammes	Remarks
8	Elkhound	Right stifle	1 × 0·01 4 × 0·025 4 × 0·05	After 9th injection dog so much better owner decided not to continue. Condition has not recurred.
9	Labrador	Right stifle	1 × 0·01 3 × 0·01 5 × 0·025 3 × 0·05 1 × 0·1	Cured.
10	Fox terrier	Left hip	1 × 0·005 3 × 0·005 9 × 0·001	Cured
11	Fox terrier	Left hip	1 × 0·01 1 × 0·001 6 × 0·025 4 × 0·05 1 × 0·1	Cured.
12	Fox terrier dog	Left shoulder	1 × 0·01 7 × 0·025 5 × 0·05	Cured.
13	Fox terrier bitch	Lumbar region	1 × 0·01 5 × 0·025 3 × 0·05	Reacted to Bayer Tuberculin test. There was a great deal of stomatitis throughout which cleared up when the dog was given orange juice. Cured. Cases 12 and 13 were mother and son. The mother of No. 13 also reacted to the Bayer Tuberculin test and P.M. showed generalised tuberculosis.
14	Fox terrier	Right hip and stifle	1 × 0·01 8 × 0·01 4 × 0·025	Cured.
15	Airedale	Right elbow	1 × 0·01 4 × 0·025	Owner had dog destroyed becaus of large melanoma in the groin Leg was improving.
16	Fox terrier	Both elbows	1 × 0·01 3 × 0·025	Patch of eczema about the size of half a crown developed on the right buttock not at site of injection.
			1 × 0·025	Dog listless, sickness, temperature normal. Two ulcers behind last molar tooth, pharyngitis, excessive thirst. Eczema on left buttock. No albumen in urine. Given orange juice.
			1 × 0·05	Leg slightly swollen—no lameness, no pain. Skin lesion healed. Ulcers in mouth healing. Brighter.
			1 × 0·05	No toxic symptoms.
			5 × 0·025 1 × 0·03	Cured. This dog developed what appeared to be toxic symptoms of gold poisoning. By giving whole orange juice and continuing it throughout treatment there was no recurrence of toxic symptoms. Fresh orange juice seems to be the suitable antidote in the dog.
		The following cases were treated with myocrisin :—		
17	Mastiff	Left hip	1 × 0·01 8 × 0·02 4 × 0·04	Cured.
18	Cairn	Epistrophus and Occipital	1 × 0·01 8 × 0·02 4 × 0·04	Cured.
19	Spaniel	Right wrist	1 × 0·01 6 × 0·02 6 × 0·05	Cured.

In addition, two ponies have been treated, one with lopion and one with myocrisin.

				Grammes	
A	Lopion	Black pony, aged	Both elbows	1 × 0·01 4 × 0·025 4 × 0·05 4 × 0·1	Cured.
B	Myocrisin	Brown pony, 6 years	Both hips	1 × 0·01 1 × 0·02 2 × 0·05 9 × 0·1	Cured.

Summary

A record of 21 cases of arthritis treated with gold is shown: 19 in the dog and two in the horse. Eighteen cases showed complete cures, two failures and one destroyed for other reasons. In regard to one failure, No. 1, I have no doubt, would have recovered had a second course been given, but the owner would not consent. For some weeks after the first course the dog showed a marked improvement and the joints became quite free in their movement. Two cases were cured with nine injections and have maintained freedom from their original trouble.

Though only four cases were treated with myocrisin, three in the dog and one in the horse, the results were quite as good as with lopion and no trouble of any kind was experienced with it; since these cases were recorded I have treated several more with myocrisin successfully and adopt as a standard dosage 1 × 0·01 gramme, 6 × 0·02 gramme, 6 × 0·05 gramme myocrisin in the dog.

The course may be repeated after a lapse of 13 weeks though so far, with one exception, none of the cases reviewed has required a further course.

From the results obtained it would appear that these salts have some use in the treatment of arthritis.

QUESTIONS IN PARLIAMENT

Dairy Cattle (Scotland) (Diseases)

Mrs. Hardie asked the Secretary of State for Scotland whether he has considered the request from the Scottish Association of Certified and Tuberculin-Tested Milk Producers, calling attention to the inadequate scientific research being made into the causes and treatment of diseases in dairy cattle and asking that a Scottish research organisation should be set up; and what action he proposes to take?

Major Lloyd asked the Secretary of State for Scotland whether he has given consideration to the resolution recently sent to him by the Scottish Association of Certified and Tuberculin-Tested Milk Producers concerning scientific research into the causes and probable cure for mastitis; and what action he is proposing to take in the matter?

Mr. Chapman: My right hon. Friend has recently received the communication from the Association to which the hon. Members refer and is giving it careful consideration. In the meantime I should point out that research into cattle diseases, including mastitis, is being actively pursued with financial assistance from the Government under the general guidance of the Agricultural Research Council at various centres in Scotland and elsewhere. It is clearly desirable that investigations on these diseases, wherever they are carried out, should be closely co-ordinated, and this is ensured by the existing arrangements. In Scotland the Council work in association with the Scottish Board of Research in Veterinary Science, which includes in its membership eight Professors of the Science Faculties of Scottish Universities and six leading members of the veterinary profession in Scotland.

Mrs. Hardie: Is the hon. Gentleman aware that those who are trying to provide disease-free milk should be given encouragement and that they are of opinion that the research is not sufficiently comprehensive, and would it not be a good thing to turn some fresh minds to this particular question?

Mr. Chapman: My right hon. Friend is fully seized of the importance of this subject, which is constantly under review, but the hon. Lady will appreciate the difficulties of getting hold of the right people at this stage of the war.

Mr. Snadden: Is my hon. Friend aware that of the four main diseases affecting dairy cattle, mastitis is the most deadly and that the laboratory facilities existing in Scotland at the present time are quite inadequate to deal effectively with this disease, and will he not consider, in the interests of public health in Scotland, setting up the organisation that was suggested in the resolution to which the hon. Lady has referred?

Mr. Chapman: I am fully aware of the importance of dealing with mastitis, which is a deadly scourge, but I must point out that there are great difficulties in increasing research facilities in wartime, although we are doing all that we can.

. . . . . .

Milk (Pasteurisation)

Dr. Russell Thomas asked the Minister of Health what standard of cleanliness is required in pasteurised milk?

Mr. E. Brown: Standards of cleanliness for pasteurised milks are prescribed in the Milk (Special Designations) Order, 1936. "Pasteurised" milk must contain not more than 100,000 bacteria per millilitre and "Tuberculin Tested Milk (Pasteurised)" not more than 30,000 bacteria per millilitre at any time after pasteurisation and before delivery to the consumer.

Dr. Thomas: Is my right hon. Friend sure that he is alive to the danger of pasteurisation as at present carried out covering up foul and filthy milk by falsely engendering the idea of safety behind this process? Is he aware too, of a recent case, published by a reputable journal, in which a labourer's boot covered with dry manure was found in a receptacle containing this milk?

Mr. Brown: That does not arise out of this Question.

Mrs. Tate: Why is "T.T." milk ever pasteurised? Is not such an action quite inexcusable?

Mr. Higgs asked the Minister of Health whether he is aware that the British Medical Association is advocating the pasteurisation of tuberculin-tested milk; and whether he is satisfied that the process is necessary and desirable?

Mr. E. Brown: The answer to the first part of the Question is: "Yes, Sir." On the second part, I am advised that, though the risk of contracting tuberculosis from drinking raw tuberculin-tested milk is remote, the danger of its conveying other milk-borne diseases can only be removed by adequate heat treatment.

. . . . .

Milk Purification (Process)

Mr. Edward Smith asked the Minister of Health whether his attention has been drawn to the system of milk purification, perfected in Denmark prior to the war, called "Stassanisation"; and whether he will take an early opportunity of giving the House the details of this process and the considered opinion of his Ministry thereon?

Mr. E. Brown: Yes, Sir. This Ministry is aware of the process known as "Stassanisation" to which it is assumed the enquiry relates. I am advised that, briefly, the process is to raise milk to a temperature of between 163·4 and 167° Fahrenheit for about seven seconds, by passing it in a thin layer between two water-heated pipes. If properly carried out, the method is efficacious for destroying pathogenic organisms.

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Colonial Products Research Council

Dr. Morgan asked the Secretary of State for the Colonies when the Colonial Products Research Council was appointed; whether any information can be made available as to the scope of the work of this council, its membership, whether selective or representative, what interests were consulted before the final decision on the council's membership, what colonial contacts on the scientific and practical side are envisaged, and what executive functions will be delegated to this council; and whether it is the intention to allow representation on behalf of the colonial producer or consumer?

Colonel Stanley: The Colonial Products Research Council was appointed towards the end of last year, and held its first meeting on January 12th. Its function is to consider what Colonial raw materials may be made of value for the manufacture of intermediate and other products required by industry and it will initiate and supervise researches, both pure and applied, on such products and generally consider how by the application of research greater use can be made of them. In framing their programme, the Council will have as their principal objective the promotion of the welfare and prosperity of Colonial peoples, and will endeavour also to increase the Colonial contribution to the welfare and prosperity of the British Empire and of the world as a whole. In carrying out their programme, the Council, which is financed by grants from the Research Fund created by the Colonial Development and Welfare Act, 1940, will co-operate with existing institutes, such as the Department of Scientific and Industrial Research, the Medical Research Council and the Agricultural Research Council, to the greatest possible extent, and will "farm out" work to these and other bodies by arrangement. It will set up facilities of its own only for work which cannot be done by other means.

The Council is composed of Lord Hankey, Chairman, Mr. Eric Barnard (Department of Scientific and Industrial Research), Mr. G. L. M. Clauson (Colonial Office), Mr. Aneurin Davies (Co-operative Wholesale Society), Dr. J. J. Fox (Government Chemist), Professor W. N. Haworth, Sir Harry Lindsay (Director of the Imperial Institute), Sir Edward Mellanby (Medical Research Council), Professor Sir Robert Robinson, Mr. G. W. Thomson (Association of Engineering and Shipbuilding Draughtsmen), Dr. W. W. C. Topley (Agricultural Research Council). Professor J. L. Simonsen, F.R.S., lately of the University College of North Wales, has been appointed Director of Research. In constituting the Council, my predecessor was guided by the advice of the Scientific Advisory Committee of the War Cabinet. Formal contact between the Council and Colonial Governments will be maintained through the Colonial Office, and this will be supplemented by personal contact between the Director and those engaged in research in the Colonies. The Council is a practical working body of persons with a special knowledge either of the conduct of research, or of Colonial products, or of possible markets. It would, therefore, as a general rule, be contrary to the principles on which the membership was made up to admit representatives of particular Colonial interests.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

April 21st.—Special Meeting of the Scottish Branch, N.V.M.A., at Glasgow, to discuss the Draft Bill, R.C.V.S., 2.30 p.m.

April 21st.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's House, 1, Wimpole Street, W.1, 2.15 for 2.30 p.m.

April 22nd.—Annual General Meeting of the Mid-West Division, N.V.M.A., at Bristol, 2.30 p.m.

April 22nd.—Annual General Meeting of the Eastern Counties Division, N.V.M.A., at Norwich, 11 a.m.

April 28th.—Annual General Meeting of the Western Counties Division, N.V.M.A., at Exeter, 2 p.m.

April 29th.—N.V.M.A. Joint Veterinary Officers and Public Health and Parliamentary Committee, 36, Gordon Square, W.C.1, 11.30 a.m.

April 29th.—Meeting of the Midland Counties Division, N.V.M.A., at Birmingham, 2.30 p.m.

April 30th.—**N.V.M.A. Council Meeting**, Connaught Rooms, Great Queen Street, W.C.2, 11.30 a.m.

April 30th.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds, 2.30 p.m.

May 6th.—Meeting of the Central Veterinary Society, Conway Hall, Red Lion Square, W.C.1, 2.30 p.m.

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Paper Control and Space Limitation

The attention of contributors to every section of *The Veterinary Record* is drawn to the announcement made in our Notices column by the Editorial Committee requesting them not to exceed a specified number of words. This restriction is intimated with regret, but is necessitated as a war-time measure in view of the paper supply situation.

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The Veterinary Profession and Military Service

The profession, during recent months, has received from the War Department greatly increased calls for the services of its members, and we have good reason to believe that further opportunities for service will arise.

There are vacancies at present and we would enjoin our younger members to consider the relative calls of this opportunity to offer their services.

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PERSONAL

After having been in practice in Camborne, Cornwall, for 33 years as a veterinary surgeon, Mr. R. H. Smythe is leaving to take over a practice in Nottingham. A native of Falmouth, he opened a practice at Redruth, where he still has a surgery, before settling in Camborne, where the practice will be continued by his partner (Mr. E. Harrop).

. . . . .

Forthcoming Marriages.—Crawford—Davies.—The engagement is announced and the marriage will take place at Cardigan on Monday, April 26th, 1943, between Gerald John Crawford, M.R.C.V.S., Ministry of Agriculture and Fisheries, and Jane Elizabeth, daughter of the late W. C. Davies and Mrs. Davies, Cardigan.

Roberts—Dawkins.—On April 17th, at St. Peter's, Earley, Reading (2 p.m.), by the Rev. Moxton, M.A., Edwin James Roberts, M.R.C.V.S., eldest son of Mr. W. E. and Mrs. Roberts, late of

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Neglect of Livestock

Sir A. Baillie asked the Minister of Agriculture the number of cases in which the war agricultural executive committees have dispossessed owners for the improper treatment of stock; and whether his attention has been called to a case of starving cows which was recently heard at Bearsted police court?

Mr. Hudson: The neglect or mismanagement of livestock is not in itself a ground for dispossession of an occupier under Defence Regulations apart from the state of cultivation of the holding, though it may well be a contributory factor. Improper treatment of livestock can be dealt with in other ways not necessarily involving dispossession of the farmer. The particular case mentioned is at present under the consideration of the Kent war agricultural executive committee from both aspects.

Angola, West Africa, to Barbara Mary Dawkins, only daughter of Mr. W. J. C. and Mrs. Dawkins, of West Dene, Wokingham Road, Reading.

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R.C.V.S. OBITUARY

Barber, George Calvert, 11, Long Close Lane, Leeds. Graduated N. Edinburgh, May 24th, 1897. Died April 6th, 1943; aged 67 years.

Braid, Peter (Capt. late R.A.V.C.), 30, Maureen Terrace, Seaham Harbour. Durham. Graduated Edinburgh, May 21st, 1901. Died April 2nd, 1943; aged 65 years.

Nuthall, Charles Edwin, C.B., C.M.G., M.R.C.V.S., Brigadier-General A.V.S. (retd.). Graduated London, March 28th, 1883. Died April 6th, 1943; aged 81 years.

Brigadier-General C. E. Nuthall, C.B., C.M.G.

We record with deep regret the death of Brigadier-General C. E. Nuthall, C.B., C.M.G., which took place at Ealing on Tuesday, April 6th, 1943, at the age of 81 years. General Nuthall had a highly distinguished career in the Royal Army Veterinary Corps and was the Director of the Army Veterinary Service in India during the last war from January, 1918, until June, 1919.

Charles Edwin Nuthall was born on February 5th, 1862, at Kingston-on-Thames and qualified M.R.C.V.S. at the Royal Veterinary College, London, on March 28th. 1883. He entered the Army Veterinary Service on July 30th, 1884, and proceeded to India in December of that year. He served in that country until March, 1891, when he returned to the Home Establishment.

In 1899 he was sent to Australia, where he was employed on Remount duties during the South African War, returning home in 1902. He was again posted to India in 1903 and served in that country for a further period of five years. The outbreak of the Great War found General Nuthall in South Africa and he was immediately recalled to England.

He was selected as Deputy Director General of Army Veterinary Service with the rank of Brigadier-General and served in that capacity from October, 1916, until proceeding to India as Director in December. 1917. He was twice mentioned in despatches and was awarded the decorations of C.B. and C.M.G.

He married Miss Edith Ayers in Bombay in 1886, and to the widow and the two daughters deep sympathy is extended in their bereavement.

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Death of Professor George Weir

As we go to Press we learn with the deepest regret of the death of Professor George W. Weir, M.R.C.V.S., of the Glasgow Veterinary College. It is hoped to publish a biographical tribute in our next issue.

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office.

	Price net s. d.	*Post free* s. d.
Agriculture and Fisheries, Ministry of:		
Agricultural Improvement Council for England and Wales. (Chairman. Donald Fergusson.) 1st Report June 29th, 1942	0 3	0 4
House of Commons Bills (Session 1942-43):		
21. Agriculture (Miscellaneous Provisions) Lords Amendments	0 1	0 2

* * * * *

MINISTRY OF AGRICULTURE NEWS SERVICE

Safeguarding Herd Health.—By the end of January nearly 5,000 farmers had placed their herds under the National "Panel" scheme for the better control of diseases of dairy cattle. Approximately 200,000 dairy cows are receiving regular veterinary examination for mastitis, contagious abortion, sterility and Johne's disease. Every herd coming under this scheme strengthens the nation's defences against the inroads of loss by disease—a loss that amounts to 50,000,000 gallons of milk a year.

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Raising Dairy Herd Standards.—Mr. R. S. Hudson has drawn attention to the poor quality of some cattle on dairy farms. Speaking at Maidstone, the Minister said there was too wide a gap between the quality of stock kept by successful and efficient dairy farmers and the type of animal on numerous dairy farms. The man with poor quality cows must do his best to raise the standard of milk production per cow.

Mr. Hudson also commented on the number of nondescript calves that were being produced, and emphasised that dairying would play a major role in post-war agriculture and if it is to be efficient and prosperous, more attention should be given to breeding, especially the use of better bulls of good milk ancestry, as well as to the health and proper feeding of ordinary commercial dairy herds.

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Parliament and the Dairy Farm.—Mr. Hudson was asked in Parliament whether he was aware of the considerable reduction in milk production owing to brewers' grains being no longer available. Seeing that milk sales off farms last December were 2½ million gallons up on December, 1941. the Minister acknowledged he was not aware. Nor had brewers' grains fed to cows been reduced, for the War Agricultural Executive Committees had, in fact, been authorised to divert wet grains to dairy farmers when that course was desirable to maintain milk yields.

Another member raised the question of the desirability of increasing the bran ration to dairy farmers at this important lactation period and asked the Minister if he proposed to increase the coupon value. Mr. Hudson replied that such increase was impracticable, for existing coupon users would fully absorb the whole of the cereal feeding-stuffs, including bran, likely to be available in the current rationing period. Other measures would be taken to hasten the reduction of the temporary local accumulations of bran mentioned by the member.

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Cattle for Britain's Post-war Milk Supply.—A recent memorandum on "A Post-war Policy for Great Britain" prepared by a group of peers holding varied political creeds contains the following interesting information: "It has been calculated that if all our people's requirements for more protective foods were satisfied from home sources, the following increase on pre-war production would be needed: milk. 25 per cent.; eggs. 60: fruit, 70; vegetables. 60: meat, 25. If we take the figure of 700.000,000 gallons as the extra milk needed, this will call for just over an additional one million cows, plus a similar number of followers. If we assume a greater efficiency and a rise of production per cow of 20 per cent., we still have to provide 400,000,000 gallons by increasing the number of cows by nearly one million, plus one million followers."

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

SPECIALISATION, PARTNERSHIPS AND REGIONAL VETERINARY CENTRES

Sir,—The tremendous increase in scientific veterinary knowledge during the last few decades has greatly widened the scope of our professional endeavour. This has shown to many the deficiencies in veterinary education and the need for post-graduate specialised studies before graduates can become fully qualified to engage in any one of the varying branches of their work. It is felt that the full scope of veterinary endeavour and service is complete responsibility for animal health in its widest sense—from pre-natal days to the delivery of safe animal products or carcases to the public. This is obviously an undertaking so vast that no one person can be expected to be competent to deal with all its aspects. Under existing circumstances it is too often true that a veterinarian is a jack of all trades and a master of none.

Many of our younger men are gravely disturbed by the existing haphazard and unco-ordinated conditions, and are determined to have them altered so that we may be enabled to give a full and efficient animal health service. The work of our profession is so largely guided by economic and other factors that specialisation as understood in the medical profession is not practicable, but a certain amount of division of labour can and should occur. Thus we already have our general practitioners, our small-animal men, our Ministry men, pathologists and research workers, teachers and food inspectors. Our research men can be, and to some extent are, further divided into those concerned with specialised studies. Whilst it is not likely that our clinicians can divide their interests into the various anatomical systems, at least they can make special studies of the different species of domestic animals.

Already a few tentative moves have been made along these lines, by men taking up special branches of practice, and by dividing the work of partnership practices at least into small- and large-animal branches. In large practices this may go further and one member will do all the panel and survey scheme work.

It will be obvious that partnership practices have other advantages beside allowing a limited amount of specialisation. Increase of capital is perhaps one of the most important, enabling better premises and equipment to be maintained, and hence a better service rendered. The question of some periods of leisure is like-

wise not to be overlooked, nor the increased confidence with which major operations and difficult cases may be handled when the morale is increased by the presence of a capable colleague.

It might be possible to envisage group or co-operative practices as a further step along these lines, which may even be of a quite unofficial type. In many districts now practitioners who are alone act with local colleagues in a spirit of good neighbourliness, to attend to urgent cases for each other in times of emergency. All send their pathological work to central laboratories, and often call each other in to discuss certain types of cases. It would not be such a tremendous step to regional grouping of practice with all the other branches of veterinary work.

Certain tentative steps have been taken in this field, too, by the appointment of veterinary investigation officers and deputing to their laboratories the bacteriological work of the survey scheme. The Animal Health Division has done something of the same sort with its divisional offices, but it is to be regretted that there is so little co-ordination between these different schemes. This difficulty could be largely or entirely overcome by setting up a series of regional centres which would undertake the work at present carried out by the Animal Health Division, the veterinary investigation officers, pathologists and clinicians. They should have ample laboratory and hospital facilities, *post-mortem* rooms and clinics. Branch centres on a smaller scale should be set up throughout the regions.

Such centres would require a large amount of capital to establish and would have to be generously subsidised by the Government. While there are many who would not like to see veterinary work developing along such nationalised lines, there will be few who fail to realise the inadequacy of their private premises and their individual efforts to make any real contribution to animal health, or even to give their own clients that full and efficient service which the latter have a right to demand; the only way in which capital for improvement is likely to become available is by accepting some degree of nationalisation.

This co-ordination of the different branches of veterinary work into regional centres would have many other advantages. Each branch would gain by contact and correlation with the others. Meat and milk inspectors would be included, to whom the available facilities would be invaluable. They in turn would supply much material for pathological study. Research workers would be attached to such centres where they would have intimate contact with each other and with workers in the field. Finally, such centres would be of vast help in the sphere of education, allowing students plenty of opportunity for clinical study and bringing them into direct contact with the more purely academic side of the undertaking.

Some lay personnel would be necessary to act as dressers, dispensers, clerks and technicians.

Unfortunately such a Utopian ideal is bound to have certain drawbacks. Individual effort and initiative will always remain as one of the greatest spurs to progress, and great care must be taken not to suppress the individuality that has been the making of so many great veterinarians. We must also take care not to lose the very happy relationship which exists between client and practitioner, nor the personal touch which has developed between practitioner and individual herds since the introduction of the survey scheme. With care, this need not happen. In fact the reverse could be the case, as clinicians would have to be retained as the mainstay of the centres; they would keep their own clients and enlarge the panel schemes.

One other objection to a regional scheme would be that there would be some degree of grading of the qualified personnel. Again, however, this need not be carried too far and would be less than is already the case in the Animal Health Division.

The future is for the young. Let our recent graduates and our students consider well how best they can serve the livestock industry, the profession and the community as a whole, and let them insist on having a voice in directing our present endeavour towards that end.

Yours faithfully,

49, Cambridge Street, L. Guy Anderson.
Aylesbury,
Bucks.
April 7th, 1943.

* * * * *

VETERINARY SURGEONS ACTS (AMENDMENT) BILL

Sir,—May I comment on the correspondence under the above heading which appeared in your issue of March 27th? Mr. Lishman, in Clause 9 of his questionnaire, makes perhaps an unfortunate reference to animal welfare societies. I am not at all clear to what he refers under the heading of advertising.

Certainly I think all societies would very much resent the suggestion that they tout for animals to be brought to them, or in any way act as is suggested. Had a full stop been placed at the end of the bracket my imputations would not be so serious.

Mr. Dykes will probably take this letter as evidence in support of this, but surely the veterinary profession, wishing to place an Act on the Statute Book, would be advised to let everyone concerned, whether veterinary surgeons or not who are interested, know the full implications of the measure. In this way possible opposition can be overcome and the Bill, if it is intended to bring in the Bill, ensured a smoother passage.

Yours faithfully,

E. Keith Robinson,
Secretary.

Our Dumb Friends' League,
Grosvenor Gardens House,
Victoria,
London, S.W.1.
March 31*st*, 1943.

* * * * *

STATE FUNDS AND THE SCOTTISH VETERINARY COLLEGES

Sir,—We were very pleased to see that Commander Galbraith raised, in Parliament recently, the question of State funds for the two Scottish Veterinary Colleges.

There seems to be a belief that Glasgow Veterinary College caters only for Glasgow and the West, but as this college is, at present, the only one of the two which accepts women students for the full R.C.V.S. course, all Scottish women wishing to enter the profession are compelled to attend the only college in Britain without State aid. We would like to add that, owing to the fact that the English colleges are unable to accept the large numbers of women applying for entrance, there are, in Glasgow, a number of students from all parts of England.

We feel, therefore, that it is grossly unfair that the Glasgow College should not be put on the same financial basis as the other veterinary colleges.

We are, etc.,

Fourteen Women Students.

c/o Women's Union,
Glasgow Veterinary College,
83, Buccleuch Street,
Glasgow, C.3.
April 7th, 1942.

* * * * *

ADVERTISING OF LIVESTOCK REMEDIES

Sir,—With the greatest possible interest, we have read the article appearing under the title "Advertising of Livestock Remedies" in *The Veterinary Record* dated March 27th.

We are more than pleased that further reference has been made to the correspondence on the same subject, which was published some time ago. As manufacturers with a knowledge of, and an interest in, the South African market, we can, of course, endorse all that Dr. H. H. Green has incorporated in a well-written and impartial review of the regulations in South Africa, and the manner in which they work.

We might add that we are in entire agreement with the spirit of the South African regulations. In our opinion nothing but good could come from a more general application of the same principles much nearer home. No manufacturer of repute wishes to be associated with "misrepresentations" in the eyes of either the veterinary profession or the animal owners, who have a right to expect nothing less than reliable products, about which no claims are made unless they can be fully and openly substantiated.

We are,

Yours faithfully,

Pharmaceutical Specialities (May & Baker) Ltd.
R. Paisley,
Veterinary Department.

Dagenham.
April 2nd, 1943.

Weekly Wisdom

"*War has few virtues. One undoubtedly is that activity in many fields of enterprise is enormously stimulated. Another is that problems can often be lifted clear of the arena of political dispute. This war of liberation will offer some compensation for the devastation and waste of human effort if it brings nearer by years the day when every man, woman and child can be assured that they will never know the want of foods on which their health depends.*

"*Not until that day dawns can the Atlantic Charter, calling for freedom from fear, freedom from want, become reality.*"—Prof J. C. Drummond, War-time Nutrition and its Lessons for the Future. *J. Roy. Soc. Arts*, 1942, May 29th, p. 422.

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	each	each	each
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Doz. ...	6/-	6/-	6/-	6/9	6/9	7/6
Inch ...	1	1½	1½	1½	1½	1½
Mm. ...	1·80	1·10	1·20	1·40	1·60	1·80
Doz. ...	8/-	6/-	6/9	7/6	8/-	8/6

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